

Rec'd 18 SEP 10 JUN 2005

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
8 July 2004 (08.07.2004)

PCT

(10) International Publication Number  
WO 2004/056325 A1

- (51) International Patent Classification<sup>7</sup>: A61K 6/083
- (21) International Application Number:  
PCT/AU2003/001713
- (22) International Filing Date:  
22 December 2003 (22.12.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
2002953460 20 December 2002 (20.12.2002) AU
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- (71) Applicant (*for all designated States except US*): NSI DENTAL PTY LIMITED [AU/AU]; Unit 7, 42 Leighton Place, Hornsby, NSW 2077 (AU).
- (72) Inventor; and
- (75) Inventor/Applicant (*for US only*): BANNISTER, Dennis, James [AU/AU]; 81 Grays Lane, Cranebrook, NSW 2749 (AU).
- (74) Agent: WATERMARK PATENT & TRADEMARK ATTORNEYS; Bldg 1, Binary Centre, Riverside Corporate Park, 3 Richardson Place, North Ryde, NSW 2113 (AU).
- Published:  
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

WO 2004/056325 A1

(54) Title: DENTAL FORMULATION

(57) **Abstract:** This invention relates to formulations for treating or reducing dentine hypersensitivity that causes pain arising from exposed dentine in the oral cavity. The present invention seeks to provide formulations for physical blockage of dentinal tubules that have long term effectiveness and cause minimal irritation (if any at all) to the tissues of the oral cavity. Preferred formulations should be easy to apply, be immediately effective and maintain dentinal tubule occlusion under normal teeth cleaning regimes that include regular tooth brushing. The invention provides a formulation for reducing dentine sensitivity in the oral cavity, which incorporates at least one physical desensitising agent in form of a light curable monomer that forms a resilient polymer gel upon curing.

BEST AVAILABLE COPY

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/AU2003/001713

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
Int. Cl. <sup>7</sup> : A61K 6/083		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DWPI, CA : Keywords - Dentine, dental, tooth, teeth, methacrylate, acrylic, itaconic, diallyloxycetic, acrylamidoglycolic, methacrylic, sensitiv, hypersensitiv, pain and related terms.		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 976386 A (BLOCK DRUG CO. INC.) 2 February 2000 Page 3 lines 10-40	1-18
X	US 5133957 A (SUH et al.) 28 July 1992 Abstract; Col.1 line 63 - col. 2 line 20	1-18
X	WO 1999/020227 A (DENTSPLY INTERNATIONAL INC.) 29 April 1999 Page 5 line 19 - page 7 line 19	1-18
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex		
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p>		
Date of the actual completion of the international search 17 February 2004		Date of mailing of the international search report 24 FEB 2004
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929		Authorized officer  S. Chew Telephone No : (02) 6283 2248

BEST AVAILABLE COPY

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/AU2003/001713

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5797749 A (BERTOLOTTI et al.) 25 August 1998 Abstract; col. 2 lines 13-35	1-14, 18

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU2003/001713

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member			
EP	0976386	US	6096292		
US	5133957	NONE			
WO	1999/020227	AU	93079/98	BR	9813112
		EP	1024778	US	2001009931
US	579749	AU	64640/98	EP	1022995
				WO	1998/041165
END OF ANNEX					

BEST AVAILABLE COPY